

**REMARKS**

Claims 1-5, 13-16, 18, and 27-32 are all the claims presently pending in the application. Claims 19-26 are currently withdrawn as directed to a non-elected invention, but possibly subject to rejoinder once allowable subject matter is determined. New claims 28-32 are added. Support for these new claims can be found at paragraphs [0112] – [0114] and Figures 3 and 4 of US20050001225A1, the publication of the present application. It is noted that no excess claims fee is due from these new claims, since Applicants have previously paid for 27 total claims and four independent claims.

It is also noted that Applicants specifically state that no amendment to any claim herein, if any, should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

As best understood, the Examiner rejects the specification under 35 U.S.C. § 112, first paragraph, as allegedly non-enabling.

Claim 13 stands rejected under 35 U.S.C. § 112, first paragraph and second paragraph, and 35 U.S.C. § 101.

Claims 1-5, 13, and 27 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,632,379 to Mitomo et al., further in view of U.S. Patent Publication 2003/0052595 A1 to Ellens et al.

Claims 14-16 and 18 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,717,353 to Mueller et al., further in view of Ellens et al.

Claims 1 and 13 stand rejected as unpatentable under nonstatutory obviousness-type double patenting over claims 12 and 13 of co-pending U.S. Patent Application No. 11/717,050 to Yoshimura et al., further in view of Ellens et al.

Claims 1 and 13 stand rejected as unpatentable under nonstatutory obviousness-type double patenting over claims 1 and 2 of U.S. Patent No. 6,632,379 to Mitomo et al., further in view of Ellens et al.

Claim 27 stands rejected as unpatentable under nonstatutory obviousness-type double patenting over claim 12 of co-pending U.S. Patent Application No. 11/717,050 to Yoshimura et al., further in view of Ellens et al.

Claim 27 stands rejected as unpatentable under nonstatutory obviousness-type double patenting over claim 1 of Mitomo et al., further in view of Ellens et al.

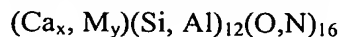
The above-recited rejections are respectfully traversed in the following discussion.

## **I. THE CLAIMED INVENTION**

As described and defined in, for example claim 1, the claimed invention is directed to a light emitting apparatus, including a light emitting element with an emission wavelength in a range of 360 to 550 nm, a rare-earth element doped oxide nitride phosphor. The light emitting element comprises a reflection layer.

A part of light radiated from the light emitting element is wavelength-converted by the phosphor, and the phosphor comprises a sialon system phosphor powder including:

$\alpha$ -sialon of 40 weight% or more and 90 weight% or less of the sialon system phosphor powder, the  $\alpha$ -sialon being structured such that a Ca site of Ca-  $\alpha$ -sialon represented by



is partially replaced by metal (M);

$\beta$ -sialon of 40 weight% or less of the sialon system phosphor powder; and

unreacted silicon nitride of 30 weight% or less of the sialon system phosphor powder, where M comprises metal that is one or more selected from Ce, Pr, Eu, Tb, Yb and Er and  $0.05 < (x + y) < 0.3$ ,  $0.02 < x < 0.27$  and  $0.03 < y < 0.3$ .

As discussed beginning at line 19 of page 1 and more particularly beginning at line 15 on page 4, the present inventors have recognized that conventional methods of mixing LED lights to obtain colors have problems with specific colors such as red or white.

The claimed invention, on the other hand, as explained at lines 1-6 of page 5, provides a combination of elements that improve these problems specifically for red and white, including, in one exemplary embodiment, an adjustment of emission efficiency by incorporating a reflection layer in the light emitting element.

## **II. THE ENABLEMENT ISSUES FOR THE SPECIFICATION AND CLAIMS, PARTICULARLY CLAIM 13**

The Examiner considers that the invention described in the specification and in the claims, particularly claim 13, is impossible, since the Examiner interprets that there would be a contradiction to have the composition defined with all of the constraints of claim 1, plus the constraints including  $a = 4 \times 10^{-2}$ , as described in paragraphs [0142] –[0153].

In response, Applicants respectfully submit that the Examiner is improperly attempting to “over-analyze” the description in the specification. The description including paragraph

[0153] is merely describing that the composition of the claimed invention can be considered to be within the three lines shown in Figure 5, sandwiched between the two shaded triangles. There is no implication that the parameters listed are intended as a precise definition of the claimed invention or any specific representative example. The Examiner's choice of  $a = 4 \times 10^{-2}$  is merely one parameter defining the boundary of this region, not any specific representative of the claimed invention.

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw these rejections.

### III. THE PRIOR ART REJECTIONS

The Examiner alleges that Mitomo, when modified by Ellens, renders obvious claims 1-5, 13, and 27. The Examiner also alleges that Mueller, when modified by Ellens, renders obvious claims 14-16 and 18.

The Examiner also alleges nonstatutory obviousness-type double patenting for claims 1 and 13, over claims 12 and 13 of co-pending US Patent Application No. 11/717,050, in view of Ellens, over claims 1 and 2 of Mitomo, in view of Ellens, as well as nonstatutory obviousness-type double patenting for claim 27 over claim 13 of co-pending application 11/717,050, in view of Ellens, and over claim 1 of Mitomo, in view of Ellens.

In response, Applicants respectfully disagree that secondary reference Ellens would satisfy the plain meaning of these claims even if the combination were to be made as urged by the Examiner. That is, the reflector in Ellens is not part of the light emitting element itself, as required by the claim language. Rather, it is part of the housing or package into which the light emitting element is mounted.

In contrast, as exemplarily shown in Figure 4, the independent claims are directed toward a light emitting element 10 having the reflection layer 26 incorporated in the element itself.

Due to this reflection layer, the emission efficiency is enhanced and, as the emission efficiency increases, the brightness of the light emitting apparatus accordingly increases. Especially, as described in [0354] of US 2005/0001225A1 (corresponding to lines 23-28 on page 62 of the hard copy filing), in mixed  $\alpha$ -sialon phosphors, the position of the excitation spectrum shifts to the longer wavelength side compared to conventional oxide phosphors (less than 400 nm, e.g., see [0024] of US 2005/0001225A1, corresponding to lines 19-27 of page 4

of the filed hard copy), and its absorption peak overlaps with emission wavelengths (450-550 nm) of the blue LED. This effect allows the light emitting apparatus including a blue LED to increase its brightness more effectively, since the emission efficiency increases due to this reflection layer.

None of the cited references teaches or suggests this reflection layer, so that the light emitting apparatus of these references cannot have the same effects as the claimed invention.

Hence, turning to the clear language of the claims, in neither Mitomo or Ellens is there a teaching or suggestion of: "...the light emitting element comprising a reflection layer ...", as required by independent claim 1. Independent claims 14 and 20 have similar language, so that claims 1-5, 13-16, and 18-26 are clearly patentable over Mitomo and Ellens, even if combined.

There is likewise no suggestion in the claims 12 and 13 of co-pending US Patent Application No. 11/717,050, so that the claimed invention is likewise clearly patentable over the double patenting rejections of record, including the co-pending application.

Therefore, Applicants submit that claims 1-5, 13-16, 18, and 27, all of the claims currently pending, are allowable over the prior art currently of record, and the Examiner is respectfully requested to withdraw this rejection.

Moreover, Applicants submit that the rejection currently of record for claims 14-16 and 18 based on Mueller are also not satisfied because the doping concentration is not demonstrated as being satisfied in Mueller. Contrary to the Examiner's premise, one of ordinary skill in the art would not agree with the Examiner's interpretation that doping ratio is based on stoichiometric ratio.

#### **IV. FORMAL MATTERS AND CONCLUSION**

In view of the foregoing, Applicant submits that claims 1-5, 13-16, 18, and 27-32, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance.

The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

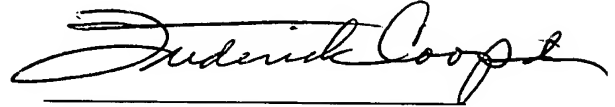
Serial No. 10/722,563  
Docket No. PTGF-03095

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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Date: 07/16/07

Respectfully Submitted,

A handwritten signature in dark ink, appearing to read "Frederick E. Cooperrider", written over a horizontal line.

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